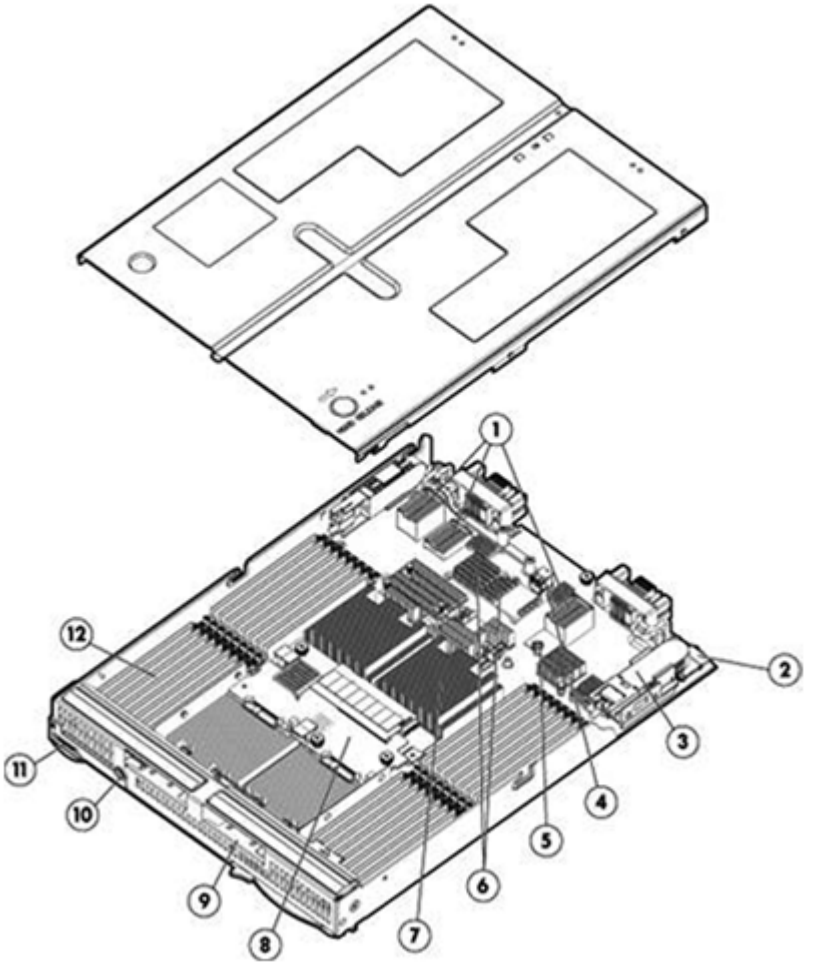
Overview



HP ProLiant BL685c G6 Server Blade

1. Three (3) mezzanine I/O expansion slots
2. Internal SD card slot
3. Optional Smart Array P400i battery
4. Internal USB connector
5. Optional Trusted Platform Module (TPM)
6. Two (2) embedded dual port Flex-10 10GbE multifunction server adapters
7. Up to four (4) AMD Opteron™ 8000 series processors
8. Smart Array P400i storage controller (available as an option in factory integrated models)
9. Two (2) small form factor (SFF) hot-plug hard drive bays
10. System power button and LED
11. Local I/O Connector
12. Thirty-two (32) PC2-5300 Registered DIMM (DDR2-667) or PC2-6400 Registered DIMM (DDR2-800) memory slots

What's New

- Support for Six-Core AMD Opteron™ processor Models 8435 and 8431

Overview

At A Glance

This document covers the HP ProLiant BL685c G6 server blade only. For more information on HP BladeSystem c-Class Enclosures and HP BladeSystem c-Class Interconnects, please see the following QuickSpecs:

- HP BladeSystem c3000 Enclosure QuickSpecs:
  http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
- HP BladeSystem c7000 Enclosure QuickSpecs:
  http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
- HP BladeSystem c-Class Interconnect Components QuickSpecs:
  http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

Engineered with a large memory footprint and more I/O than any other four socket server blade, the BL685c G6 eliminates the barriers to server consolidation and delivers outstanding performance for compute-intensive applications.

HP ProLiant BL685c G6 server blade includes:

- Processor:
  - Up to four (4) Six-Core AMD Opteron™ 8400 Series processors
    - Supports up to 2.6 GHz, 2.2 GHz HyperTransport™; 512 KB Level 2 cache memory per core; 6 MB Level 3 cache
  - Up to four (4) Quad-Core AMD Opteron 8300 Series processors
    - Supports up to 2.9 GHz, 2.2 GHz HyperTransport; 512 KB Level 2 cache memory per core; 6 MB Level 3 cache
  - AMD Dual Dynamic Power Management™ for optimum performance and reduced power consumption
  - ServerWorks HT-2100, HT-1000 chipsets
- Memory:
  - Up to 256 GB of memory, supported by thirty-two (32) slots of PC2-5300 Registered DIMMs or 128 GB of memory, supported by thirty-two (32) slots of PC2-6400 Registered DIMMs
  - Supporting memory interleaving (2:1)
    NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.
- Storage Controller:
  - Smart Array P400i RAID controller with 512 MB cache (optional battery to enable battery-backed write cache (BBWC). Supports RAID 0,1.
    NOTE: The HP Smart Array P400i controller is required for all blades that support hot plug hard disk drives. For customers who choose to configure a driveless model via CTO or choose to use Solid State Drives, a Smart Array P400i controller is not required. See Factory Integrated Models section for more information.
  - HP Embedded SATA Controller
- Internal Drive Support:
  - Up to two (2) small form factor (SFF) SAS or SATA hot plug hard disk drives, or
  - Up to two (2) non-hot plug SATA Solid State Drives (SSD)
    NOTE: Simultaneous operation of hot plug hard drives and solid state drives is not supported.
- Network Controller:
  - Two (2) embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapters
    NOTE: Flex-10 capability requires the use of an HP Virtual Connect Flex-10 10Gb Ethernet module. Learn more at: www.hp.com/go/virtualconnect.
    NOTE: Each port is autosensing 1Gb / 10Gb, and can interoperate with 1Gb HP BladeSystem c-Class interconnect components.
  - One (1) additional embedded 10/100 network adapter dedicated to iLO 2 management
- Mezzanine Support:
  - Three (3) I/O expansion mezzanine slots.
  - Supports up to three (3) mezzanine cards
    - Dual-Port Fibre Channel Mezzanine (4-Gb or 8-Gb) options for SAN connectivity (Choice of Emulex or QLogic)

Overview

  - iSCSI Ethernet mezzanine option for optimized iSCSI connectivity
  - Ethernet server adapter mezzanine options for additional network ports
  - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity (based on Mellanox technology)
- Internal Media Support:
  - One (1) internal USB 2.0 connector for security key devices and USB drive key
  - One (1) internal SD-HC card slot
- Trusted Platform Module:
  - One (1) internal TPM 1.2 module connector
- Form Factor:
  - HP ProLiant BL685c G6 server blade plugs into the BladeSystem c3000 and c7000 enclosures
- Management:
  - HP ProLiant Onboard Administrator (powered by the Integrated Lights-Out 2 management processor) provides virtual KVM graphical remote console, virtual media, simplified server setup, and core server control functions out of the box.
  - Unlock the full capabilities of the HP ProLiant Onboard Administrator with iLO Advanced for BladeSystem to take advantage of capabilities such as boot and failure sequence replay, on-demand video record and playback, and multi-user console for up to four users. Learn more at www.hp.com/go/iLO
  - HP Insight Control suite delivers foundation management, including proactive health management, lights out remote control, optimization of power usage, rapid server deployment, performance analysis, vulnerability scanning and patch management and virtual machine management. Now with Dynamic Power Capping technology, ICE can potentially triple the capacity of your data center by reclaiming trapped power and cooling capacity. Learn more at www.hp.com/go/ice.
  - HP Insight Control suite for Linux (ICE-LX) delivers integrated Linux lifecycle management, including rapid scalable deployment with integrated firmware updates, total control monitoring with health & performance management, lights-out remote access & control, power usage optimization, and virtual machine management. ICE-LX improves productivity & effiency in your Linux operation with power & thermal technology and scaling for large environments. For more info, see www.hp.com/go/ice-linux.
- Operating Systems and Virtualization Software:
  - Supports Windows, RHEL, SLES, OEL, Solaris, VMware, Citrix Essentials for XenServer
- Enclosures:
  - HP offers three (3) different c-Class server blade enclosures to meet your individual needs:
    - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to eight (8) ProLiant BL685c G6 servers plugged vertically.
    - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to four (4) HP ProLiant BL685c G6 servers plugged horizontally.
    - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to four (4) HP ProLiant BL685c G6 servers plugged vertically.
  - Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 enclosures.
  - For additional enclosure information, please see: http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.
    NOTE: For optimal cooling and system performance the BL685c G6 requires the c7000 enclosure be configured with 10 fans and the c3000 enclosure be configured with 6 fans.
- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. SATA hard drives have a one year warranty. SAS drives have a 3 year warranty.
    NOTE: Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity.

Overview

Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

Processor	**Six-Core Processors** AMD Opteron™ processor Model 8435 (2.6 GHz, 6 MB L3 Cache, 75W ACP) AMD Opteron processor Model 8431 (2.4 GHz, 6 MB L3 Cache, 75W ACP) **Quad-Core Processors** AMD Opteron processor Model 8389 (2.9 GHz, 6 MB L3 Cache, 75W ACP) AMD Opteron processor Model 8387 (2.8 GHz, 6 MB L3 Cache, 75W ACP) Low Power AMD Opteron processor Model 8381 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP) NOTE: Offered through Configure-To-Order process only. See Factory Integration Models section for more details. NOTE: AMD Opteron 8400 series processors are 64-bit, six-core, and support AMD Virtualization™. NOTE: AMD Opteron 8300 series processors are 64-bit, quad-core, and support AMD Virtualization™. NOTE: Processor wattage references reflect Average CPU Power (ACP). For more information on ACP visit: http://www.amd.com/powernow.	
Upgradeability	Upgradeable to quad (4) processors NOTE: The HP ProLiant BL685c G6 only supports two (2) and four (4) processor configurations.	
Cache Memory	512 KB Level 2 cache memory per core 6 MB Level 3 cache memory	
Chipset	ServerWorks HT-2100, HT-1000	
Memory	Type	PC2-5300 DDR2 Registered DIMMs at 667 MHz PC2-6400 DDR2 Registered DIMMs at 800 MHz
	Standard	8 GB (4 x 2 GB)
	Maximum	256 GB (32 x 8 GB) at 533 MHz
	NOTE: Memory must be installed in pairs. NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor. NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.	
Network Controller	Two (2) embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapters NOTE: Flex-10 capability requires the use of an HP Virtual Connect Flex-10 10Gb Ethernet module. Learn more at: www.hp.com/go/virtualconnect. One (1) additional 10/100 network adapter dedicated to iLO 2 Management	
I/O Expansion Slots	Three (3) I/O expansion mezzanine slots (All x8 PCI Express)	

Standard Features

Integrated Manageability	ProLiant Onboard Administrator (powered by the Integrated Lights-Out 2 management processor)		
Storage Controller	HP Smart Array P400i Controller	512MB memory module supports RAID 0,1 Available upgrades: Battery-backed write cache option	
	NOTE: The HP Smart Array P400i controller is required for all blades that support hot plug hard disk drives. For customers who choose to configure a driveless model via CTO or choose to use Solid State Drives, a HP Smart Array P400i controller is not required. See Factory Integrated Models section for more information.		
	HP Embedded SATA Controller	Supports non-hot plug SATA SSD only	
Maximum Internal Storage	Hot Plug SAS	600GB SAS	2 x 300GB Serial SCSI
	Hot Plug SATA	500GB SATA	2 x 250GB Serial ATA
Graphics	Integrated ATI RN-50 1280 x 1024 x 16M color (32 MB DDR memory)		
Graphics Resolution Supported	Resolution Color Depths	Depths 1280 x 1024, 16.7M , 64k, 256,16 1024 x 768, 16.7M, 64k, 256, 16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16	

Fibre Channel Support

Four optional dual-port Fibre Channel HBAs are supported by the HP ProLiant BL685c G6. Each mezzanine circuit board connects directly to the server blade system board. These Fibre Channel HBAs are available via option kits and must be ordered separately.

HBA mezzanine card option kits:

Emulex LPe1105-HP 4Gb FC HBA (403621-B21)

- Based on the same field-proven ASIC, firmware, and driver technology as Emulex's renowned LPe1150 HBA, the Emulex LPe1105-HP is fully driver compatible with all Emulex HBAs

Emulex LPe 1205-HP 8Gb FC HBA (456972-B21)

- Exceptional performance, enhanced security, and scalable management for virtual server and enterprise-class applications

QLogic QMH2462 4Gb FC HBA (403619-B21)

- Uses common drivers which means that customers can standardize on one QLogic driver whether they are using the QMH2462 or other HBAs powered by QLogic

QLogic QMH2562 8Gb FC HBA (451871-B21)

- Provides a first step into the 8Gb future, advanced, embedded support for virtualized environments and reduced power consumption

Standard Features

Emulex and QLogic Fibre Channel HBAs for HP BladeSystem c-Class feature:

- Optimal performance utilizing PCI Express
- 4/2/1Gb/s auto negotiating speeds (4Gb HBAs)
- 8/4/2Gb/s auto negotiation speeds (8Gb HBAs)
- Dual-ports for redundant path connections
- Up to two FC HBAs per server blade providing redundant FC HBA support
- Optimized for HP StorageWorks and supported by third party SAN vendors
- Support for Microsoft® Windows® and Linux operating system environments

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Compatible SAN

HP ProLiant BL685c G6 server blades are optimized for HP StorageWorks MSA, EVA, and XP
HP ProLiant BL685c G6 server blades are compatible with select third party SANs (please see blade storage page for more details:
http://h18000.www1.hp.com/products/servers/proliant-bl/c-Class/storage.html)

Insight Control suite (ICE)

Insight Control suite delivers essential management for HP BladeSystem lifecycles, including proactive health management, lights out remote control, optimization of power usage, rapid server deployment, performance analysis, vulnerability scanning and patch management and virtual machine management.

Insight Control suite installs and licenses the following components by default using a wizard-based integrated installer:

- HP Systems Insight Manager
- HP iLO Advanced for BladeSystem or iLO Advanced
  NOTE: iLO Advanced license will be enabled when ICE is purchased as standalone software
- HP Insight Power Manager software
- HP Insight Rapid Deployment software
- HP Insight Performance Manager module
- HP Insight Vulnerability and Patch Manager module
- HP Insight Virtual Machine Manager software for ProLiant

NOTE: The Insight Control Environment for BladeSystem suite is no longer being sold as standalone software. You can continue to purchase Insight Control suite with the c-Class enclosure as before. For standalone software, you can purchase the Insight Control suite starting January 26, 2009. The standalone Insight Control suite license will license HP ProLiant ML, DL and BL servers.

- ICE standalone license covers iLO Advanced SIM, RDP, IPM, PMP, VPM, VMM
- ICE license purchased with a c-Class enclosure covers iLO Advanced for BladeSystem, SIM, RDP, IPM, PMP, VPM and VMM

Additional Insight Software included on the Insight Software Media kit can be installed manually.

- HP Insight Server Migration software for ProLiant
  NOTE: HP Insight Server Migration software for ProLiant is licensed separately from the Insight Control suite. HP Insight Remote Support Standard
- HP Insight Remote Support Advanced (previously Service Essentials Remote Support Pack)

NOTE: HP Insight Server Migration Software for ProLiant can be installed from the SMP-P2P CD included in the Insight Software media kit.
NOTE: Insight Control suite can be installed from the Insight Software DVD, which can be purchased with HP BladeSystem c-Class enclosures with a choice of licensing options. Licensing options include a

free 30 day evaluation license for 8 servers (default option for every enclosure order), a full purchased license for 8 blade servers or a full purchased license for 16 blade servers). For additional information on HP c-Class Infrastructure please visit: HP BladeSystem c-Class Enclosures QuickSpecs:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
NOTE: For additional product and licensing information about Insight Control Environment for BladeSystem, HP Systems Insight Manager and Essentials software refer to:
http://www.hp.com/go/proliantessentials

HP Insight Control Environment for Linux (ICE-Linux) provides comprehensive discovery, imaging & deployment, monitoring, and management for Linux-based ProLiant server platforms. Built on the industry-leading HP Systems Insight Manager framework, this solution integrates open source technology with experience leveraged from HP's Linux products in HP ICLE and HP XC Clusters, while providing paths to the future with developing management technologies.

NOTE: As of February 1, 2009, HP iLO Power Management Pack for BladeSystem is no longer being sold. Customer can either purchase HP Insight Control suite which contains all the components of IPMP or the standalone components which include iLO Advanced, Insight Power Manager software and HP Systems Insight Manager.

HP Insight Control suites and most HP Insight Software titles include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. From more information about this service, please visit:
http://www.hp.com/services/insight.

HP Insight Control suite for Linux (ICE-LX) management software

HP Insight Control suite for Linux (ICE-LX) delivers an integrated management solution for multi-system Linux environments with productivity for administrators in both Enterprise and Cluster environments. HP ICE-LX integrates a robust feature set of the best of open source and HP technologies for discovery, imaging & provisioning, deployment, monitoring, remote access, virtualization, and clustering. Full lifecycle management is complemented by multi-system scaling, thermal & power management, and direct-to-the-hardware control. HP ICE-LX is backed by HP's Linux expertise and global HP Support.

HP Insight Control suite for Linux licenses the following capabilities and includes an integrated installer for core functionality:

- HP Systems Insight Manager
- HP Integrated Lights-Out 2 Advanced
- HP Rapid Scalable Deployment module (integrated)
- HP Total Control Monitoring module (integrated)
- HP Virtual Machine Manager software
- HP Insight Power Manager software

Rapid Scalable Deployment tightly integrates HP Systems Insight Manager (SIM) with a user-customizable software repository and flexible deployment modes, virtualization support, and remote server access & control. Linux lifecycle productivity is assured with bare metal discovery, integrated firmware updates, image captures & provisioning, distro installations, user-defined & customizable scripts (including AutoYAST and Kickstart files), and deployment scheduling. Flexible deployment functionality allows broad use with virtualization and scales to accommodate large environments.

Total Control Monitoring integrates health and performance monitoring with HP Systems Insight

Manager (SIM) and virtualization for broad decision-making support. A variety metrics are available for monitoring, assessment, thresholds, alerts, and action - and allow user-customization. Open source technologies like Nagios® are integrated with HP technologies to be accessible via browser (GUI) or command line (CLI) interfaces and have auto-generated user configurations to allow users immediate productivity in their environment. User configuration scripts can be customized and monitoring capabilities can be extended using Nagios® plug-ins. Performance is monitored using a wide variety of metrics for 'at-a-glance' views to allow control that scales for large environments.

Additional software solutions are available to enhance user capabilities, although these are licensed separately from the HP Insight Control suite for Linux:

- HP Insight Server Migration software (for physical server migrations)
- HP Serviceguard for Linux software (for failover and recovery)
- Platform HPC for ICE-Linux software (for cluster management & turnkey HPC application stack)

NOTE: For additional product and licensing information about HP Insight Control suite for Linux (ICE-LX), visit: http://www.hp.com/go/ice-linux.

HP Insight Control management suites and most HP ProLiant Essentials include a one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.

HP ProLiant Onboard Administrator

HP ProLiant Onboard Administrator, powered by the Integrated Lights-Out 2 management processor, simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with the HP BladeSystem Onboard Administrator, HP Systems Insight Manager, Insight Control suite, and Insight Dynamics - VSE suite for ProLiant helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Capabilities of the HP ProLiant Onboard Administrator embedded in ProLiant BL servers include, but are not limited to the following:

- ROM-based Setup Utility (RBSU) and Option Rom Configuration for Arrays (ORCA)
- IML and iLO event logging
- Automatic Server Recover (ASR)
- OS independent hardware health status
- Present server power consumption
- Virtual Unit ID control
- Virtual KVM based remote console
- Virtual media (single server, browser based access only)
- Remote serial console
- Virtual power button control
- Dynamic Sector Repairing (with Smart Array controller)
- Drive Parameter Tracking (with Smart Array controller)
- Integrated remote console (ActiveX Control client)
- Single Sign-on from BladeSystem Onboard Administrator

Unlock the full capabilities of HP ProLiant Onboard Administrator with iLO Advanced for BladeSystem.

Standard Features

Server Management Stand Alone Software Products	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms. For additional information, please see: http://www.hp.com/go/insight
	HP Insight Rapid Deployment software	HP Insight Rapid Deployment Pack extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant blade servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles.
	HP Insight Performance Manager module	HP Insight Performance Manager module (offered exclusively through the Insight Control suites) - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources
	HP Insight Dynamics - VSE suite for ProLiant	The HP Insight Dynamics - VSE suite for ProLiant is advanced infrastructure management software that allows you to analyze and optimize your adaptive infrastructure to manage physical and virtual resources in the same way. HP Insight Dynamics - VSE gives you a powerful toolkit to accelerate complex technology projects and simplify daily operations. It enables you to plan capacity and power continuously, balance across physical and virtual resources, ensure cost-effective high availability and provision infrastructure consistently. HP Insight Orchestration, an optional extension to Insight Dynamics - VSE, enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. HP Insight Recovery, also an optional extension for Insight Dynamics - VSE, enables cost-effective disaster recovery for physical and virtual environments. Application environments can be reactivated in minutes with the touch of a button to a remote location. NOTE: For more information, visit: http://www.hp.com/go/insightdynamics, http://www.hp.com/go/insightorchestration, http://www.hp.com/go/insightrecovery
	HP Insight Server Migration software for ProLiant	Upgrading, replacing, or virtualizing your existing server? Effortlessly transition to new virtual or physical HP ProLiant servers or BladeSystem with automated, accurate and affordable migration of OS, application and data. HP Insight Server Migration software for ProLiant. automates the manual processes required for migrating servers between physical or virtual platforms, whether migrating to VMware or Microsoft virtual machines. SMP allows all of the following: • Physical to ProLiant • Physical to virtual • Virtual to virtual • Virtual to ProLiant
	HP Insight Virtual Machine Manager software for ProLiant	HP Insight Virtual Machine Manager software provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.

Standard Features

	HP Insight Vulnerability and Patch Manager module	HP Insight Vulnerability and Patch Manager module (offered exclusively through the Insight Control suites) - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.
	iLO Advanced for BladeSystem	Unlocks the full capabilities of the ProLiant Onboard Administrator with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication).
Core Infrastructure Management	HP ProLiant Essentials Foundation Pack	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters. HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecyle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation. The foundation pack includes: • HP SmartStart • HP Management • HP ProLiant Firmware Maintenance SmartStart version supported (minimum): SmartStart 8.15 http://www.hp.com/servers/smartstart

	Insight Management Providers (WBEM)	The HP Insight Management WBEM Providers leverage the rich set of base-level instrumentation provided by the system management controllers and drivers, I/O controllers and drivers, and system firmware interfaces delivering in-depth hardware management, including hardware inventory data, system state, and event notifications.
		Key Benefits Include:
		
		• Heightened Security
		  ○ Single integrated Security Model
		  ○ Built using industry standard secure protocols and encryption algorithms (SSL, SSH)
		  ○ Reduce the number of entry points into internal network
		• Reduced complexity of setup and configuration
		• Delivers standards-based management across vendor platforms
		• Robust in-depth and usable data that is provided to the HP System Management Homepage and Central Management Console
		• Guaranteed event delivery
		• Reduces overall load on the server by smaller agent footprint and maintenance burden
		• Provides in-depth hardware management, inventory data, system state, and event notifications
		
		The Insight Management Providers are included on ProLiant Support Packs.

Standard Features

	For additional information about the Management Providers please visit http://www.hp.com/go/HPwbem
Insight Management Agents (SNMP)	The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers. Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the Insight Rapid Deployment software For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at: http://www.hp.com/servers/manage.
Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
ProLiant Support Packs and ROMPaq, software	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the Insight Rapid Deployment Pack, SmartStart or downloaded from software and drivers download pages website at: http://www.hp.com/go/support.

HP Serviceguard for Linux (SGLX)

HP Serviceguard for Linux is a high availability clustering solution designed to protect applications and services from a wide variety of software and hardware failures, monitoring the health of each server (node) and quickly responding to failures such as those that affect system processes, system memory, LAN media and adapters, and application processes.

The following is a quick summary of HP Serviceguard for Linux features and support. For the most recent list of Linux distributions & kernels, servers and storage supported with Serviceguard for Linux, see the Serviceguard for Linux Datasheet, available at: http://www.hp.com/go/sglx/info.

- Supported Linux Distributions:
  - Red Hat EL 4
  - Red Hat EL 5
  - SUSE SLES10
- Supported Server Platforms
  - HP Integrity BladeSystem to Superdome
  - HP ProLiant BladeSystem p-Class & c-Class
  - HP ProLiant DL
  - HP ProLiant ML
  - IBM System x
  - IBM BladeCenter
  - Dell PowerEdge
  - Sun x64
  - Fujitsu Siemens PRIMERGY

Standard Features

- Supported Virtual Machines
  - SG/LX in HP Integrity Virtual Machines guests
  - SG/LX in VMware ESX guests
  - SG/LX in Red Hat and SUSE Xen hosts (DOM0)
- Application Integration Toolkits
  - HP Serivceguard for Linux Oracle Database Toolkit
  - HP Serviceguard Extension for SAP on Linux (SGeSAP/LX)
  - Free Application Integration Toolkits:
    - Apache
    - MySQL
    - NFS
    - PostgreSQL
    - Samba
    - Tomcat
    - Sendmail
- Disaster Tolerant Solutions
  - HP Serviceguard for Linux Extended Distance Cluster (XDC) extends cluster distances up to 100 km, utilizes software RAID mirroring for data replication and is storage array independent
  - HP StorageWorks XP/EVA Cluster Extension Software for Linux (CLX) works seamlessly with HP Serviceguard for Linux, HP StorageWorks Continuous Access, and HP Disk Arrays to automate failover and failback between sites
- Software updates are distributed by HP Services to customers with support contracts

NOTE: For additional information on HP Serviceguard for Linux, visit: http://www.hp.com/go/sglx or see the HP Serviceguard for Linux QuickSpecs.
NOTE: HP Serviceguard for Linux products for HP ProLiant and select 3rd party x86 class servers include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/swsupport.

Operating Systems and Virtualization Software

Microsoft Windows Server
Microsoft Windows Server Hyper-V
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Oracle Enterprise Linux (OEL)
Solaris 10 for x86/x64 based Systems
VMware
Citrix Essentials for XenServer

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/supportos and our driver download page http://www.hp.com/support/BL685cG6

Standard Features

Availability	Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection Two (2) embedded dual-port 10Gb Ethernet adapters for redundant LAN connections Two (2) hot-plug SAS/SATA hard drive bays and integrated RAID (Smart Array P400i) controller (Battery-backed write cache is optional.) Redundant ROM on each server blade Multiple mezzanine I/O expansion ECC Memory Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)
Industry Standard Compliance	ACPI 2.0 Compliant PCI 2.2 Compliant WOL Support Microsoft® Logo certifications USB 2.0 Support
Security	Power-on password Administrator's password Integrated Lights-Out 2 has 12 customizable user accounts and SSL encryption Integrated Lights-Out 2 can be disabled via a Global Setting
Security - Trusted Platform Module	The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. NOTE: For more information about TPM, including a white paper, go to www.hp.com/go/TPM. NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment. NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.
Factory Express Portfolio for Servers and Storage	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches. For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

Standard Features

HP Enterprise Configurator

The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

Service and Support

HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs.

The HP Care Pack service for HP ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

To fully capitalize on your HP BladeSystem servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a HP BladeSystem server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - Simplify ProLiant solution implementation, maintenance and management.

- Support Service - 4-Hour Response Coverage, 3-Year, 24 x 7, Same Business Day
- Deployment Service - Installation and Start Up for HP BladeSystem Infrastructure

Enhanced Service - Optimize service level to increase IT performance and availability

- Support Service - HP Proactive BladeSystem Service, 1-Year
- Deployment Service - Enhanced Network Installation and Start-up for HP BladeSystem Switches

Installation & Start-Up service for HP BladeSystem Infrastructure plus HP BladeSystem Enhanced Network Installation and Start-UP as per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

For a complete listing of service offerings and information visit:
http://www.hp.com/services/bladesystemservices
http://www.hp.com/go/proliant/carepack

Models

Six-Core Models

HP ProLiant BL685c G6 8435 6C, 8G (2P) 539815-B21	Processor(s)	(2) AMD Opteron™ processor Model 8435 (2.6 GHz) (2) AMD Opteron processor Model 8431 (2.4 GHz)
	Cache Memory	512 KB Level 2 cache memory per core 6 MB Level 3 cache memory
HP ProLiant BL685c G6 8431 6C, 8G (2P) 539818-B21	Memory	8 GB (4 x 2 GB) PC2-6400, Registered DDR2-800
	Network Adapter	Two (2) embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapters and one (1) additional 10/100 server adapter dedicated to iLO 2 management
	Storage Controller	HP Smart Array P400i Controller with 512MB (optional battery-backed write cache)
	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	Up to 600 GB SAS Up to 500 GB SATA
	Optical Drive	None
	Form Factor	Up to four (4) full-height blades supported in the HP BladeSystem c3000 Enclosure Up to eight (8) full-height blades supported in HP BladeSystem c7000 Enclosure

Quad-Core Models

HP ProLiant BL685c G6 8389 QC, 8G (2P) 491336-B21	Processor(s)	(2) AMD Opteron processor Model 8389 (2.9 GHz) (2) AMD Opteron processor Model 8387 (2.8 GHz)
	Cache Memory	512 KB Level 2 cache memory per core 6 MB Level 3 cache memory
HP ProLiant BL685c G6 8387 QC, 8G (2P) 491337-B21	Memory	8 GB (4 x 2 GB) PC2-6400, Registered DDR2-800
	Network Adapter	Two (2) embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapters and one (1) additional 10/100 server adapter dedicated to iLO 2 management
	Storage Controller	HP Smart Array P400i Controller with 512MB (optional battery-backed write cache)
	Hard Drives	No drives included; (2) SFF SAS/SATA drive bays
	Internal Storage	Up to 600 GB SAS Up to 500 GB SATA
	Optical Drive	None
	Form Factor	Up to four (4) full-height blades supported in the HP BladeSystem c3000 Enclosure Up to eight (8) full-height blades supported in HP BladeSystem c7000 Enclosure

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above.
Configure-to-order servers must start with a CTO Chassis.
NOTE: FIO indicates that this option is available only as a Factory Installable Option.

Step 1: Base Server Blade Configuration

Models	HP ProLiant BL685c G6 CTO Blade (North America)	491338-B21
	Two (2) embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapters and one (1) additional 10/100 server adapter dedicated to iLO 2 management	
	Two (2) small form factor (SFF) SAS/SATA hot plug hard drive bays	
	Two (2) non-hot plug internal SATA SSD drive bays	
	HP Embedded SATA Controller	
	ProLiant Onboard Administrator	

Step 2: Choose Required Options (one of the following from each list unless otherwise noted)

Processors	For dual (2) processor configurations choose (one of the following):	
	AMD Opteron™ processor Model 8435 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base NOTE: If four (4) processors are desired, select one 539816-L21 and one 539816-B21.	539816-L21
	AMD Opteron processor Model 8431 (2.4 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base NOTE: If four (4) processors are desired, select one 539819-L21 and one 491341-B21.	539819-L21
	AMD Opteron processor Model 8389 (2.9 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base NOTE: If four (4) processors are desired, select one 491341-L21 and one 491341-B21.	491341-L21
	AMD Opteron processor Model 8387 (2.8 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit, FIO Base NOTE: If four (4) processors are desired, select one 491343-L21 and one 491343-B21.	491343-L21
	Low Power AMD Opteron processor Model 8381 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit, FIO Base NOTE: If four (4) processors are desired, select one 508864-L21 and one 508864-B21.	508864-L21
Memory	2 GB REG PC2-6400 DDR2 2 x 1 GB Kit	497763-B21
	4 GB REG PC2-6400 DDR2 2 x 2 GB Kit	497765-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Kit	497767-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit	504351-B21
	16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit	408855-B21
	64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit	495605-B21
	NOTE: Must be installed in pairs.	

NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.

NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

Step 3: Choose Additional Factory Integration Options

Storage Controller	HP Smart Array P400i Controller for BL685c G6 NOTE: The Smart Array P400i controller is required for all blades that support hot plug hard disk drives.	512867-B21
	HP Smart Array P400i Controller for BL685c G6 Battery Option Kit NOTE: The Smart Array battery option kit is required to enable battery-backed write cache (BBWC).	452348-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional "Core Options" and "Additional Options" please see the options sections below. For additional options, including server blade enclosures interconnect options and power subsystem options; please see the following QuickSpecs:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
and HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html.

Core Options

Ethernet Mezzanine Options	**Gigabit Ethernet Mezzanines**	
	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem	416585-B21
	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	HP NC364m Quad Port 1GbE BL-c Adapter	447883-B21
	HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	QLogic QMH4062 1GbE iSCSI Adapter for HP BladeSystem c-Class	488074-B21
	NOTE: The Gigabit Ethernet adapters transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section.	
	10 Gigabit Ethernet Mezzanines	
	HP NC512m Dual Port 10GbE Multifunction BL-c Adapter NOTE: An NC512m network adapter card is required for each server blade connecting to the HP 10Gb Ethernet BL-c Switch. NOTE: The NC512m is supported in type II x8 PCI Express mezzanine slots; maximum one adapter per server. For more information, see the Mezzanine Slot Compatibility matrix within the HP NC512m Dual Port 10GbE Multifunction BL-c Adapter QuickSpecs: http://h18004.www1.hp.com/products/servers/networking/nc512m/index.html NOTE: A minimum of 2 GB of server memory is required per NC512m and supports a maximum of 32 GB for Windows and 64 GB for Linux. NOTE: The NC512m adapter transmits from the server only at 20 Gbps, full duplex per port.	440910-B21
	HP NC522m Dual Port Flex-10 10GbE Multifunction BL-c Adapter NOTE: The NC522m requires a minimum of 2 GB of server memory. NOTE: The NC522m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	467801-B21
	HP NC532m Dual Port Flex-10 10GbE Multifunction BL-c Adapter NOTE: The NC532m requires a minimum of 2 GB of server memory. NOTE: The NC532m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	467799-B21
Fibre Channel Mezzanine Options	**4Gb Fibre Channel Mezzanines**	
	Emulex LPe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
	8Gb Fibre Channel Mezzanines	
	HP BLc Emulex LPe1205- 8Gb FC HBA for HP c-Class BladeSystem	456972-B21
	QLogic QMH2562 8Gb FC HBA for HP BladeSystem c-Class	451871-B21

Core Options

Processors	AMD Opteron™ processor Model 8435 (2.6 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	539816-B21
	AMD Opteron processor Model 8431 (2.4 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	539819-B21
	AMD Opteron processor Model 8389 (2.9 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	491341-B21
	AMD Opteron processor Model 8387 (2.8 GHz, 6 MB L3 Cache, 75W ACP) Processor Option Kit	491343-B21
	Low Power AMD Opteron processor Model 8381 HE (2.5 GHz, 6 MB L3 Cache, 55W ACP) Processor Option Kit	508864-B21
	NOTE: HP ProLiant BL685c G6 processor option kits contain two (2) processors.	
	NOTE: The ProLiant BL685c G6 only supports two (2) and four (4) processor configurations.	
Memory	2 GB REG PC2-6400 DDR2 2 x 1 GB Kit	497763-B21
	4 GB REG PC2-6400 DDR2 2 x 2 GB Kit	497765-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Kit	497767-B21
	8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit	504351-B21
	16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit	408855-B21
	64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit	495605-B21
	NOTE: Must be installed in pairs.	
	NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.	
	NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.	
Hard Drives	NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.	
	SAS Hot Plug SFF Enterprise (ENT) Drives	
	HP 300GB 6G SAS 10K SFF DP ENT HDD	507127-B21
	HP 300GB 3G SAS 10K SFF DP ENT HDD	492620-B21
	HP 146GB 6G SAS 15K SFF DP ENT HDD	512547-B21
	HP 146GB 6G SAS 10K SFF DP ENT HDD	507125-B21
	HP 146GB 3G SAS 10K SFF DP ENT HDD	418367-B21
	HP 146GB 3G SAS 15K SFF DP ENT HDD	504062-B21
	HP 72GB 6G SAS 15K SFF DP ENT HDD	512545-B21
	HP 72GB 3G SAS 15K SFF DP ENT HDD	418371-B21
	HP 72GB 3G SAS 10K SFF DP ENT HDD	384842-B21
	HP 36GB 3G SAS 15K SFF DP ENT HDD	418369-B21

NOTE: SAS drives have a 3 year warranty.
NOTE: Please see the for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html
(Worldwide)

SATA SFF Hot Plug Entry (ETY) Drives

HP 250GB 3G SATA 5.4K SFF ETY HDD	460355-B21
HP 120GB 1.5G SATA 5.4K SFF ETY HDD	458924-B21

NOTE: SATA drives have a 1 year warranty. Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html
(Worldwide)

Solid State Drives (SSD)

HP 32GB 1.5G SATA NHP SFF SP ENT SSD	461201-B21
HP 64GB 1.5G SATA NHP SFF SP ENT SSD	461203-B21

NOTE: SATA Solid State drives (SSD) have a 3-year warranty. Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13121_div/13121_div.html

HP Insight Control suite (ICE)	NOTE: Electronic licensing options are available for select Insight Software products. Please see the appropriate Insight Software QuickSpecs for additional information.	
	HP Insight Control suite	
	HP Insight Control suite, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: Contains 1 license for each of RDP, PMP, VMM, VPM, IPM and iLO Advanced. Includes one year of 24 x 7 HP Software Technical Support and Update Service NOTE: Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s).	452148-B22
	NOTE: For additional license kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Insight Software Media Kit NOTE: Insight Software DVD media without licenses. Contains Insight Software suites, standalone software products and components licensed by Insight Control Environment suites. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
	HP Insight Control suite for Linux (ICE-LX) management software	
	HP Insight Control suite for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates NOTE: This part number can be used to purchase one (1) license with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: One certificate is shipped for each license.	464423-B22
	HP Insight Control suite for Linux, Media pack (DVD) - No licenses included NOTE: This optional Media pack DVD contains the ISO image for HP Insight Control suite for Linux, HP System Insight Manager, HP Insight Power Manager, HP Virtual Machine Manager, and an integrated installer. Servers must be acquired separately. NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ice-linux (click on Download button).	464422-B22
	NOTE: For additional License kits and Electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html	
Server Management Stand Alone Software Products	NOTE: Electronic licensing options are available for Insight Control suites and select Insight Software products. Please see the appropriate Insight Control and Insight Software QuickSpecs for additional information.	
	Deploy	
	HP Insight Rapid Deployment software	
	HP Insight Rapid Deployment software 1-Server License including 1 year 24x7 Technical Support and Updates NOTE: This license allows 1 server to be deployed and managed via RDP. Customer will receive a printed license entitlement certificate via physical shipment. The license	452151-B21

entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.
NOTE: This license formerly known as ProLiant Essentials Rapid Deployment Pack.

NOTE: For additional license kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html

HP Server Migration software for ProLiant

HP Insight Server Migration software for ProLiant, No Media, Physical / Virtual to ProLiant Single Migration License, including 1 year of 24x7 Technical Support — 460750-B21
NOTE: This license allows 1 physical to ProLiant or virtual to ProLiant migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

HP Insight Server Migration software for ProLiant, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support — 460753-B21
NOTE: This license allows 1 physical to virtual or virtual to virtual migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

HP Insight Server Migration software for ProLiant, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support — 460756-B21
NOTE: This license allows unlimited migrations (physical to ProLiant, physical to virtual, virtual to virtual, and virtual to ProLiant) for one year. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional license kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12855_div/12855_div.html

Monitor

HP Insight Dynamics-VSE suite for ProLiant

HP Insight Dynamics-VSE with Insight Control suite, 1-server license including 1 year of 24x7 Technical Support and Updates — 483527-B21
NOTE: This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive a printed license entitlement certificate via physical shipment.

HP Insight Dynamics-VSE without Insight Control suite, 1-server license including 1 year of 24x7 Technical Support and Updates — 483531-B21
NOTE: This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive a printed license entitlement certificate via physical shipment.

NOTE: For additional License Kits, please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.html

Control

HP iLO Advanced for BladeSystem

HP Integrated Lights-Out Advanced for BladeSystem, No Media, 1-Server License — 512488-B21

	Featuring: Sophisticated remote control and security features for HP BladeSystem servers and ProLiant BL servers in text console environments. **NOTE:** For additional license kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html	
	Optimize	
	HP Insight Power Manager software (IPM)	
	HP Insight Power Manager, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates **NOTE:** Customers purchasing this upgrade must already have an iLO Advanced or Select license on each managed server. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	452677-B21
	NOTE: For additional license kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12623_div/12623_div.html	
	HP Insight Virtual Machine Manager software for ProLiant	
	HP Insight Virtual Machine Manager software for ProLiant, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates **NOTE:** Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	452153-B21
	NOTE: For additional license kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.html **NOTE:** Electronic licensing options are available for Insight Control suites and select Insight Software products. Please see the appropriate Insight Control and Insight Software QuickSpecs for additional information. **NOTE:** Flexible and volume quantity license kits are available for Insight Software title. Refer to http://www.hp.com/go/insightcontrol or the various Insight software product QuickSpecs for more information. **NOTE:** For more information regarding Insight Software, please see the following URL: http://www.hp.com/go/insightcontrol.	
Security	HP Trusted Platform Module (TPM) Kit **NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	488069-B21

Additional Options

Storage Controller	HP Smart Array P700m/512 Controller	508226-B21
	HP Smart Array P700m/256 Controller	507925-B21
	HP Smart Array P700m/512 Battery Option Kit NOTE: The Smart Array battery option kit is required to enable battery-backed write cache (BBWC). NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html (Worldwide)	452348-B21
I/O Accelerator Mezzanine Options	HP StorageWorks 80GB IO Accelerator for BladeSystem c-Class	AJ876A
	HP StorageWorks 160GB IO Accelerator for BladeSystem c-Class	AJ877A
	HP StorageWorks 320GB IO Accelerator for BladeSystem c-Class	AJ878A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html	
HP InfiniBand Mezzanine Options	HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	448262-B21
	HP 4X DDR IB Mezzanine HCA for HP BladeSystem c-Class	410533-B21
c-Class Mezzanines	HP PCI Express Mezzanine Pass-Thru Card for HP BladeSystem c-Class NOTE: Required to support the HP StorageWorks SB40c Storage Blade HP BladeSystem PCI Expansion Blade, HP StorageWorks Ultrium Tape Blades with HP c-Class BladeSystem full-height server blades (e.g. BL480c, BL680c G6, BL685c G6)	431643-B21
HP Ultrium Tape Blades	HP StorageWorks SB1760c Tape Blade NOTE: LTO-4 Ultrium tape technology	AQ697A
	HP StorageWorks SB920c Tape Blade NOTE: LTO-3 Ultrium tape technology	AJ401A
	HP StorageWorks Ultrium 448c Tape Blade NOTE: LTO-2 Ultrium tape technology	440947-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12729_div/12729_div.html NOTE: Please visit the BladeSystem c-Class enclosure QuickSpecs for a complete list of recommended data protection solutions for BladeSystem c-Class enclosures: http://www.hp.com/go/blades	
HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12587_div/12587_div.html (Worldwide)	411243-B21

Additional Options

HP PCI Expansion Blade	HP PCI Expansion Blade NOTE: Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. NOTE: Please see the QuickSpecs for Technical Specifications and additional configuration information at: http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html	448018-B21
High Availability Cluster Options	HP Serviceguard for Linux on HP ProLiant and other third-party x86 Servers - Physical Media Kit NOTE: This kit contains media only.	519353-B21
	HP Serviceguard for Linux on HP ProLiant and other third-party x86 Servers Single-Server License Licensed per Server NOTE: This license allows Serviceguard for Linux to be installed on 1 server. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service	519354-B21
	HP Serviceguard for Linux - Flexible-Quantity License (for HP ProLiant and other third-party x86 servers) Licensed per Server NOTE: This part number can be used to purchase multiple licenses with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service	519355-B21
	HP Serviceguard Linux Oracle Database Toolkit for HP ProLiant/x86 Servers Licensed per cluster Includes media and One Year 24x7 Software Support & Updates	463833-B21
	HP Serviceguard Extension for SAP on Linux for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463834-B21
	HP Serviceguard Linux Extended Distance Cluster (XDC) for HP ProLiant/x86 Servers Licensed per physical server Includes media and One Year 24x7 Software Support & Updates	463835-B21
	NOTE: The above is not a complete list of all HP Serviceguard for Linux product numbers. For a detailed list of supported configuration/certification options for HP Serviceguard for Linux, please refer to the HP Serviceguard for Linux Configuration & Ordering Guide available at: http://www.hp.com/go/sglx/info. NOTE: HP Serviceguard for Linux products running on x86 platforms now include one year of 24 x 7 Software Technical Support and Updates. Please see the Support Information section of the HP Serviceguard for Linux QuickSpecs for details. NOTE: For additional information including a complete list of Product Numbers for HP Serviceguard for Linux, please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html (Worldwide)	

Additional Options

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B

Service and Support Offerings (HP Care Pack Services)	NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.	
	Hardware Services On-site Service	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UK108E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK109E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK110E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time including HP holidays, Electronic	UE473E

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

DIMM installation guidelines:

1. All DIMMs must be PC2-5300 Registered DDR2 DIMMs (667 MHz) or PC2-6400 Registered DDR2 DIMMs (800 MHz).
2. Both DIMM slots in a memory bank must be populated.
3. Banks must be populated in sequential alphabetic order, starting with bank A.
4. Both DIMMs in a memory bank must be identical. Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A.
5. Multiple advanced memory protection (AMP) modes are supported, based on DIMM population and RBSU selection. The server blade defaults to Advanced ECC.
6. DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.
7. DIMM banks are active only when the corresponding processor socket is populated.
8. The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

HP ProLiant BL685c G6 Server Blade

Standard Memory

8192 MB (4 x 2048 MB) of PC2-6400 Registered DDR2-800 ECC DIMMs.

Standard Memory Replaced with Optional Memory

Up to 262144 MB of PC2-5300, Registered DDR2 ECC DIMMs. Memory is available with the removal of standard memory and the installation of optional PC2-5300, Registered DDR2 DIMM memory expansion kits.

Memory		Slot							
Standard	8192 MB	Processor 1							
		1A	2A	3B	4B	5C	6C	7D	8D
		2048 MB	2048 MB	Empty	Empty	Empty	Empty	Empty	Empty
		Processor 2							
		9E	10E	11F	12F	13G	14G	15H	16H
		2048 MB	2048 MB	Empty	Empty	Empty	Empty	Empty	Empty
		Processor 3							
		17I	18I	19J	20J	21K	22K	23L	24L
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
		Processor 4							
		25M	26M	27N	28N	29O	30O	31P	32P
		Empty	Empty	Empty	Empty	Empty	Empty	Empty	Empty
Maximum	262144 MB	Processor 1							
		1A	2A	3B	4B	5C	6C	7D	8D
		8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB
		Processor 2							
		9E	10E	11F	12F	13G	14G	15H	16H
		8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB
		Processor 3							
		17I	18I	19J	20J	21K	22K	23L	24L
		8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB
		Processor 4							

Memory

		25M	26M	27N	28N	29O	30O	31P	32P
		8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB	8192 MB

Following are memory options available from HP:

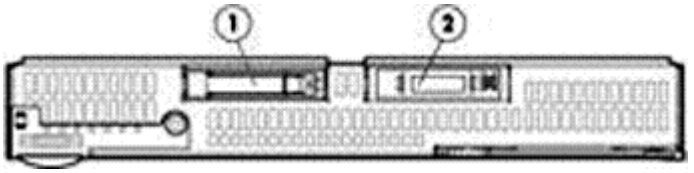
2 GB REG PC2-6400 DDR2 2 x 1 GB Kit	497763-B21
4 GB REG PC2-6400 DDR2 2 x 2 GB Kit	497765-B21
8 GB REG PC2-6400 DDR2 2 x 4 GB Kit	497767-B21
8 GB REG PC2-6400 DDR2 2 x 4 GB Low Power Kit	504351-B21
16 GB REG PC2-5300 DDR2 2 x 8 GB Dual Rank Kit	408855-B21
64 GB REG PC2-5300 DDR2 8 x 8 GB Dual Rank Kit	495605-B21

NOTE: Must be installed in pairs.

NOTE: DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the banks furthest away from each processor.

NOTE: The memory bus will operate at 800 MHz with four (4) or fewer DIMMs per processor, 667 MHz with six (6) DIMMs per processor, and 533 MHz with eight (8) DIMMs per processor.

Storage



1-2 2 x SFF SAS or SATA Hot Plug Hard Drives

Hard Drives

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.

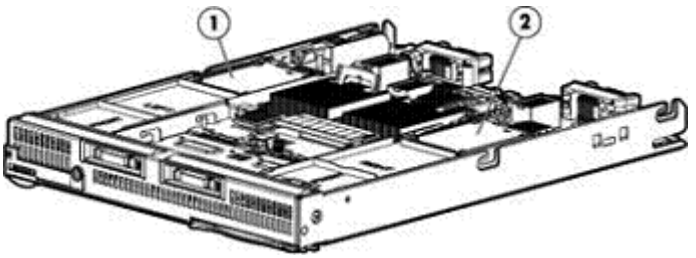
NOTE: Simultaneous operation of hot plug hard drives and solid state drives is not supported.

SAS Hot Plug SFF Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
300GB 6G SAS 10K DP	2	1-2	Smart Array P400i Controller
300GB 3G SAS 10K DP			
146GB 6G SAS 15K DP			
146GB 3G SAS 15K DP			
146GB 6G SAS 10K DP			
146GB 3G SAS 10K DP			
72GB 6G SAS 15K DP			
72GB 3G SAS 15K DP			
72GB 3G SAS 10K DP			
36GB 3G SAS 15K DP			

SATA Hot Plug SFF Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 5.4K	2	1-2	Smart Array P400i Controller
120GB 1.5G SATA 5.4K			



1-2 2 x SATA Solid State Drives (SSD)

SATA Non-Hot Plug Solid State Drives

	Quantity Supported	Position Supported	Controller
32GB 1.5G SATA SSD	2	1-2	HP Integrated SATA Controller
64GB 1.5G SATA SSD			

System Unit	Dimensions (H x W x D)	14.42 x 2.19 x 20.058 (36.63 x 2.19 x 50.95 cm)	
	Weight (approximate)	Maximum (all hard drives and processors installed)	22.8 lbs (10.3 kg)
		Minimum (two processors and four DIMMs)	20.82 lbs (9.44 kg)
	Power Specifications	For power specifications including input requirements, BTU rating, and power supply output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html To review typical system power ratings use the HP BladeSystem Power Sizer available at: http://www.hp.com/go/bladesystem/powercalculator NOTE: For optimal cooling and system performance the BL685c G6 requires the c7000 enclosure be configured with 10 fans and the c3000 enclosure be configured with 6 fans.	
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F), maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	10 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class	

Enclosures QuickSpecs located at:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

HP Smart Array P400i Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe provides 2 GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4 GB/s maximum bandwidth.
	Cache Memory	72-bit 512MB cache; ECC protection, battery-backed, and transportable
	Logical Drives Supported	Up to 32 logical drives
	Maximum Logical Drive Capacity	500 GB (2 x 250 GB)
	Host Memory Addressing	64-bit, supporting greater than 4 GB server memory space
	RAID Support	RAID 1 (Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature

Embedded NC532i Dual Port Flex-10 10GbE Multifunction Server Adapter	Type	Integrated dual-port KR 10GbE
	Network Processor	Broadcom 57711
	Data Transfer Method	x8 PCI Express 1.0
	Network Transfer Rate	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth NOTE: Each port is autosensing 1 Gb / 10 Gb, and can interoperate with 1 Gb HP BladeSystem c-Class interconnect components. NOTE: Each port on the NC532i adapter transmits from the server at only 20 Gbps (theoretical) full duplex.
	IEEE Compliance	802.1p QoS, 802.1Q VLAN tagging, 802.3ad link aggregation, 802.3ap 10GBase-KR, and 802.3x flow control
	Standard Features	• ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing • 9K Jumbo frames • Microsoft Windows Receive Side Scaling (RSS)

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.